

WHAT IS CLAIMED IS

1. A radioactive substance decontamination apparatus
for decontaminating a metal member contaminated by a
radioactive substance using a reducing decontamination
agent comprising:

multiple reducing decontamination tanks having
different radiation control values as the upper limit values
for radiation dose of the reducing decontamination agent
stored inside;

10 a carrier for immersing said metal member into said
multiple reducing decontamination tanks and a washing tank;

a tube for transferring into the second reducing
decontamination tank where said radiation control value
is the second value which is higher than said first value,
15 the reducing decontamination agent in the first reducing
decontamination tank where said radiation control value
is the first value;

20 a reducing agent decomposer for decomposing a component
contained in the reducing decontamination agent of the
reducing decontamination tank where said radiation control
value is the highest out of the reducing decontamination
tanks connected by said tube; and

25 a washing tank for washing said reducing
decontamination agent deposited on said decontaminated
metal member.

2. A radioactive substance decontamination apparatus according to Claim 1 further characterized by comprising a reducing decontamination agent decomposer for decomposing reducing decontamination agent in the reducing decontamination tank to which said tube is not connected.

5 3. A radioactive substance decontamination apparatus comprising:

multiple reducing decontamination tanks having different radiation control values as the upper limit values
10 for radiation dose of the reducing decontamination agent stored inside;

a first tube for transferring into the second reducing decontamination tank where said radiation control value is the second value which is higher than said first value,
15 the reducing decontamination agent in the first reducing decontamination tank where said radiation control value is the first value out of said multiple reducing decontamination tanks;

20 a second tube for transferring into the third reducing decontamination tank where said radiation control value is the third value which is higher than said second value, the reducing decontamination agent in
said second reducing decontamination tank;

25 a reducing agent decomposer for decomposing reducing decontamination agent of said third reducing

decontamination tank;

a washing tank for washing said reducing decontamination agent deposited on said decontaminated metal member, and

5 a carrier for immersing said metal member in said multiple reducing decontamination tanks and washing tank.

4. A radioactive substance decontamination apparatus according to any one of Claims 1 through 3 further comprising an oxidizing decontamination tank for said decontaminating
10 metal member using oxidizing decontamination agent; said radioactive substance decontamination apparatus further characterized in that said carrier immerses said metal member in said oxidizing decontamination tank while carrying said metal member from the reducing decontamination tank where said radiation control value is the highest out of said reducing decontamination tanks, to the reducing decontamination tank where said radiation control value is the second highest out of said reducing decontamination tank.

20 5. A radioactive substance decontamination apparatus according to Claim 4 further comprising a tube for transferring oxidizing decontamination agent in said oxidizing decontamination tank to any of said multiple reducing decontamination tanks.

25 6. A radioactive substance decontamination apparatus

according to Claim 4 further comprising a tube for transferring oxidizing decontamination agent in said oxidizing decontamination tank to a reducing decontamination tank where said radiation control value
5 is the highest out of said reducing decontamination tanks.

7. A radioactive substance decontamination apparatus according to any one of Claims 1 through 3 further comprising multiple oxidizing decontamination tanks for decontaminating said metal member using oxidizing
10 decontamination agent;

said radioactive substance decontamination apparatus further characterized in that said carrier immerses said metal member in said oxidizing decontamination tank in the process of carrying said metal member from the reducing
15 decontamination tank where said radiation control value is the highest, to the reducing decontamination tank where said radiation control value is the lowest while immersing said metal member in the descending order of said radiation control value.

20 8. A radioactive substance decontamination apparatus according to any one of Claims 1 through 7 further characterized in that;

said carrier is designed carry multiple said metal members, and, when carrying said metal members one by one,
25 it immerses the second metal member in the tank other than

the one where the first metal member is immersed.

9. A radioactive substance decontamination method comprising the steps of:

decontaminating said metal member by immersing the
5 metal member contaminated by radioactive substance into
the first reducing decontamination tank having the first
radiation control value,

further decontaminating said metal member by immersing
said metal member in the second reducing decontamination
10 tank having a second radiation control value lower than
the first radiation control value,

transferring to a washing tank said metal member whose
radiation dose is reduced below the specified value by
decontamination, thereby washing off reducing
15 decontamination agent deposited on said metal member;

monitoring the radiation dose of reducing
decontamination agent of said second reducing
decontamination tank,

sending the reducing decontamination agent of said
20 first reducing decontamination tank to a reducing
decontamination agent treating apparatus when the radiation
value of reducing decontamination agent of said second
reducing decontamination tank has exceeded said second
radiation control value to as to provide decomposition and
25 treatment of said reducing decontamination agent, and

sending the reducing decontamination agent of said second reducing decontamination tank to said first reducing decontamination tank to ensure that said reducing decontamination agent can be reused as reducing
5 decontamination agent of the first reducing decontamination tank.

10. A radioactive substance decontamination method according to Claim 9 further comprising a step of decontaminating the second metal member in a reducing decontamination tank where a first metal member is not immersed, while decontaminating said first metal member in a decontamination tank or washing it in a washing tank.

15. A radioactive substance decontamination method according to Claim 7 further characterized in that immersion is started from said second reducing decontamination tank if the radiation dose of a metal member is lower than that of said first radiation control value.

20. A radioactive substance decontamination method according to any one of Claims 9 through 11 further characterized in that:

25. a metal member is immersed in the next reducing decontamination tank subsequent to immersion in said oxidizing decontamination tank, while transferring among reducing decontamination tanks having different radiation control values.

13. A radioactive substance decontamination method according to any one of Claims 9 through 12 further characterized in that:

5 while a metal member contaminated by radioactive substance is transferred to different reducing decontamination tanks, oxidizing decontamination tank or washing tank, liquid deposited on said metal member is removed by any one of a shower, air blower, wiping means and mechanical polishing means.

10 14. An radioactive substance decontamination apparatus according to any one of Claims 4 through 6 further characterized in that:

15 at least one of a protective barrier, protective cover and gutter is provided between said reducing decontamination tanks and/or between and said reducing decontamination tank and said oxidizing decontamination tank.